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RESEARCH

*ABA revisited: Evidence from Czech and Latin degree morphology

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We present a novel account of root suppletion in comparatives and superlatives, and show how it accounts for the presence of ABB and ABC patterns, as well as the absence of ABA patterns. The account assumes that suppletive roots, despite appearances to the contrary, are not contextual allomorphs, but portmanteaus spelling out two distinct features, one belonging to the lexical root, and another one belonging to the comparative. The regular comparative affix then spells out an additional feature relating to the comparative domain. In other words, we show that the comparative (CMPR) head that enters into the morphological makeup of the comparative (Bobaljik 2012) is to be split up into two distinct heads, C1 and C2 (see also Caha 2016). We extend this idea to SPRL, which we show is likewise to be split up into S1 and S2, in order to account for suppletive ABC patterns. These four distinct heads receive empirical support from facts of the degree morphology in Czech and Latin. The new account of root suppletion allows a straightforward way of deriving the attested and unattested patterns of (root) suppletion in degree comparison. The analysis developed supports the hypothesis that the absence of AAB patterns in degree comparison is due to a constraint of a different nature altogether.

Keywords: *ABA; adjectives; suppletion; comparative; superlative

1 Introduction

Bobaljik (2012) argues that it is a universal property of (morphological) comparatives and superlatives that, when comparatives have a suppletive form, the superlative will also be suppletive and vice versa, i.e. there are no ABA-patterns as in (1b), nor AAB-patterns as in (1c).

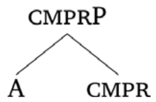
(1) a. good-better-best
b. *good-better-goodest
c. *good-gooder-best

Bobaljik calls this the Comparative-Superlative Generalisation (CSG), and adduces extensive evidence in support of the fact that this generalisation is a language universal.[1] Bobaljik's account for the CSG relies on a number of ingredients. The first ingredient is the Containment Hypothesis, which states that "the representation of the superlative properly contains that of the comparative" (Bobaljik 2012: 4; see Dunbar & Wellwood 2016 for a recent alternative to Bobaljik's proposal). Concretely, the (derived) structure of comparative adjectives is as in (2), and that of superlatives is as in (3).[2]

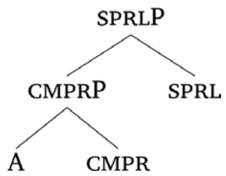
[1] The CSG does not apply to so-called absolute superlatives or elatives, which indicate a very high degree of the adjective, and which lack a comparative meaning component (e.g. Italian *buonissimo* 'very good' vs *il migliore* 'the best').

[2] These structures are derived from run-of-the-mill right-branching syntactic representations through an operation M, the exact nature of which Bobaljik is noncommittal about, e.g. Morphological Merger (Marantz 1988) or Local Dislocation (Embick 2010); see Embick & Noyer (2001) for discussion.

(2)



(3)



The second ingredient are the rules of exponence which regulate lexical insertion. The relevant rules for the *good-better* alternation are given in (4):

(4) a. √GOOD → *good*
b. √GOOD → *be(tt)-*/___] CMPR

These rules state that *good* will be inserted under the terminal that dominates the root √GOOD, except in the more specific context of CMPR, where the suppletive root *bett-* will be inserted. The insertion of the suppletive root follows from the context-sensitive rule (4b). The absence of ABA-patterns now follows from these two ingredients: by (4b) *bett-* will be inserted whenever a CMPR head is adjacent to the root (which sits under the terminal A-node). Because of the Containment Hypothesis, this will be the case both in the comparative and the superlative alike. As a result, there is no way in which the root could be suppletive in the comparative but not in the superlative, i.e. no ABA can arise.

The two ingredients so far do not rule out an AAB-pattern, however. Suppose English had (5) instead of (4b) above:

(5) √GOOD → *be(tt)-*/___] CMPR] SPRL]

This rule would insert *bett-* in the more specific context of the superlative, and *good* elsewhere, i.e. in the positive and the comparative degree, yielding an AAB-pattern *good-gooder-best*. In order to rule this out, Bobaljik (2012: 13) assumes an adjacency condition on root allomorphy, which blocks a head Y (i.e. SPRL in (5)) from conditioning root allomorphy across an intervening head X (i.e. CMPR in (5)). This is the third ingredient of his account.

In order to account for ABC-patterns, where the suppletive root for the superlative is different from the one for the comparative, as in Latin *bonus-melior-optimus* 'good-better-best', Bobaljik needs a fourth ingredient. At first blush, the superlative in such cases would seem to require a rule of the form in (5) after all (in addition to, and not in replacement of, the two rules in (4b)). However, this way of opening the door for ABC-patterns will also open it for AAB-patterns, as their exclusion is based on the adjacency condition, which disallows rules of the form in (5). In order to keep adjacency intact, then, Bobaljik (2012: 14) proposes that insertion can also take place for the complex formed by the heads [[A] CMPR]: this complex can be targeted by lexical insertion, either through insertion at the phrasal level (as proposed in Starke 2009; Caha 2009; Radkevich 2010), or after the application of an operation of Fusion (Halle & Marantz 1993). Adopting either of these two assumptions, it then becomes possible to formulate a rule of exponence for the superlative alone that will observe adjacency. Under the fusion approach, for example, a complex head √GOOD⊕CMPR is created, after which the following rules of exponence apply:

(6) a. √GOOD → bon-

b. $\sqrt{\text{GOOD}}$⊕CMPR → mel-
c. $\sqrt{\text{GOOD}}$⊕CMPR → opt-/ ___] SPRL]

These assumptions potentially again open the door to AAB-patterns, however, namely if a grammar had rule (6c) but not (6b). An additional restriction is therefore needed to the effect that, if there is a context-sensitive rule of exponence involving a node α, then there must also be a context-free rule of exponence involving α (Bobaljik 2012: 150).

In this paper, we propose both a refinement and a simplification of Bobaljik's theory. The refinement is that we shall argue that both the comparative and the superlative head should be split up into two distinct heads, yielding a sequence <S2, S1, C2, C1>. The simplification is that we propose a theory without fusion, rules of contextual allomorphy of the type in (4b), the adjacency condition, or the restriction on possible rules of exponence mentioned in the previous paragraph. In particular, we shall argue that, on the one hand, the more fine-grained structure of the comparative and the superlative, and, on the other hand, the general principles governing lexical insertion in nanosyntax, suffice to derive all the relevant facts.

In addition to being conceptually simpler, the proposal we are about to make is also empirically superior, in that it accounts for certain facts of root suppletion that are unexplained under Bobaljik's account. These relate to a particular type of allomorphy in the comparative and superlative suffixes: these suffixes may in certain cases appear in a truncated (i.e. shorter) form in the presence of a suppletive root. We shall defend a conception of root suppletion where (part of) the content of the comparative and/or superlative is actually featurally present in the suppletive root, which is a portmanteau for two different features. That is, the essence of the contrast between *good* and *bett-* is not their different contexts of insertion, but their internal makeup. The fact that they appear in different environments will be shown to follow automatically from general principles governing lexical insertion. These general principles will also explain the correlation between suppletion and truncation of the regular affix, as well as provide an account for the absence of ABA-patterns in comparative suppletion.

The paper is structured as follows: in section 2 we present some of the (nanosyntactic) background that we shall be assuming. In section 3, we present our proposal in a nutshell. Section 4 presents the evidence for splitting up CMPR, which involves Czech comparative degree morphology. This section also introduces the account of root suppletion, which is based on the distinction between the C1 and C2 heads that jointly make up the comparative. In section 5 we present evidence from Latin showing the presence of two distinct heads in the superlative as well. Finally, in section 6 we explain how the attested patterns of root suppletion are derived, how the unattested ABA pattern is underivable, and we discuss the status of AAB patterns.

2 Prerequisites

We start out by presenting some important background necessary to a proper understanding of our proposal, which adopts the framework of nanosyntax.[3] Nanosyntax assumes that the lexicon is postsyntactic, and consequently, that the syntax manipulates features. Nanosyntax takes each feature to be a syntactic head (One Feature, One Head). The lexicon contains lexical items, which pair form and meaning. The form is the phonological form, and the meaning are the features that are used in the syntax, as well as aspects of rich lexical content that are not expressed in features. Specific to nanosyntax is the assumption that the lexicon contains nothing but well-formed syntactic expressions

[3] We refer the reader to Caha (2009); Starke (2009); Pantcheva (2011); De Clercq (2013); Rocquet (2013); Lander (2016); Baunaz et al. (to appear) for a more detailed discussion of the nanosyntactic framework.

(Starke 2014a). Concretely, lexical items do not contain unorganised feature bundles, but features organised hierarchically in a tree in accordance with the rules of syntax.

A logical consequence of this view on the lexicon is that postsyntactic lexical insertion targets phrases, not heads, since lexical items typically contain more than a single feature. The process of lexical insertion is subject to the *Superset Principle*:

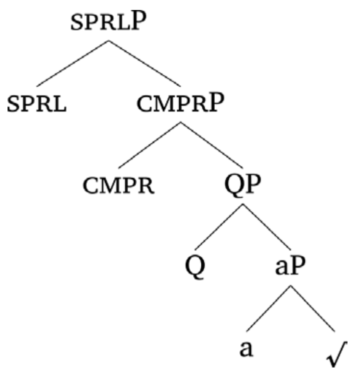
(7) *Superset Principle*
A lexical entry may spell out a syntactic node iff the lexical tree contains the syntactic node.

As a result of this principle, there may be a competition between several forms for insertion, for example if one lexical entry is a perfect match for a syntactic node, and another contains the syntactic node as a subtree. The winner of the competition is determined by the *Elsewhere Principle* (Kiparsky 1973):

(8) *The Elsewhere Principle*
In case two rules, R_1 and R_2, can apply in an environment E, R_1 takes precedence over R_2 if it applies in a proper subset of environments compared to R_2.

An informal version of this principle states that the lexical item with the least superflous features, i.e. the closest match, wins the competition.

In order to illustrate the working of the above principles, we discuss a sample nanosyntactic derivation of a regular comparative and superlative in English. For expository purposes, we assume a structure that is closely similar to that of Bobaljik given in (2) and (3) above, with a few minor modifications, but, for now, without the refinements that we shall propose in section 3 below. The most important modification here is that we assume that gradable adjectives contain a Q head, which is responsible for gradability (cf. De Clercq & Vanden Wyngaerd 2017b).[4] QP dominates a categorial *a*-head and a root. The functional sequence is therefore as follows:

(9)


A gradable adjective like *smart* is the phrasal spellout of the QP-node in this structure.[5] The comparative morpheme spells out only the CMPR feature, whereas the superlative morpheme spells out both the SPRL and CMPR features. The corresponding lexical items are given in (10):

(10) a. < /smɑːrt/, [$_{QP}$ Q [$_{aP}$ a √]] , SMART >
b. < /ər/, [$_{CMPRP}$ CMPR] >
c. < /əst/, [$_{SPRLP}$ SPRL [$_{CMPRP}$ CMPR]] >

[4] This Q-head spells out as *much* in English in cases of *much*-support, as in *Lisa is fond of Henry, perhaps too much so*; see Corver (1997).

[5] We shall have reason to modify this statement somewhat below, after we have introduced our proposal to split up CMPR. For now, this is not important, however.

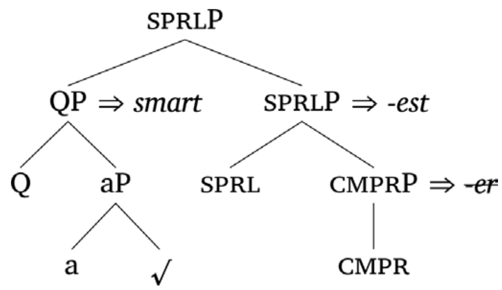
A lexical item consists of three parts: a phonology, a syntactic tree, and, optionally, a component of conceptual meaning, represented as SMART in (10a). This is present in cases where the meaning of the lexical item in question is underdetermined by its features, i.e. with nonfunctional lexical items with rich lexical meanings.

Nanosyntax assumes cyclic phrasal spellout: after each Merge step in syntax, the lexicon is consulted for spellout, and if a suitable lexical item is found, the node is spelled out, i.e. paired with a phonology. Let us consider a concrete derivation. In a first step, the syntax merges √ and *a*, creating aP. The lexicon is consulted, and *smart* spells out aP. This is possible in virtue of the Superset Principle, since the lexical tree of *smart* contains aP as a constituent. The syntax next merges the next head in the functional sequence, creating QP. The lexicon is consulted and a match is found in *smart*, which leads to the spellout of QP as *smart*. This spellout overrides the spellout of aP as *smart* in the previous cycle.

The derivation of the adjective may stop here, yielding the spellout *smart*. Alternatively, the derivation may proceed to merge CMPR, creating CMPRP; the lexicon is consulted again, but no lexical item matches the structure of CMPRP: the lexical item for *-er* in (10b) does not contain QP as in (9), in particular, it does not contain the material dominated by QP that is not Q. Spellout-driven movement must therefore take place, so that CMPRP may be spelled out: the complement of CMPR (QP) moves to the left, adjoining to CMPRP. We assume that this movement does not leave a trace. Now (the lower segment of) CMPRP matches (10b), and CMPRP spells out as *-er*, yielding *smart-er*.[6]

If the syntax proceeds to Merge SPRLP, the same procedure is repeated: QP moves leftward to adjoin to SPRLP, in a spec-to-spec fashion. As a result, SPRLP comes to dominate SPRL and CMPRP, so that *-est* spells out SPRLP, overwriting the earlier spellout *-er*, and deriving *smart-est*. The resulting tree for *smartest* is given in (11) (with spellout informally represented by the double arrows, and cyclic override with striketrough).

(11)



An important argument in support of the Containment Hypothesis concerns the fact that some languages have the exponent of the superlative stacked onto the one for the comparative. A case in point is Persian, where the comparative ending is *-tar*, and the superlative stacks *-in* on top of *-tar*, yielding forms like the following (see Bobaljik 2012: 31):

(12) kam 'little'
kam-tar 'littler'
kam-tar-in 'littlest'

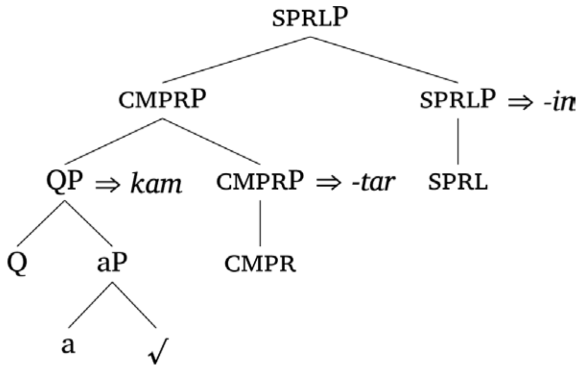
In such a language, the lexicon has slightly different entries, as shown in (13):

[6] We adopt a view on phrase structure as in Kayne (1994), with a distinction between heads and phrases even if a phrase contains only the head (contra bare phrase structure; Chomsky 1995), and with specifiers adjoined to the phrase level. We further assume that movement of the complement of the head CMPR does not leave a trace. We also ignore the adjunction to CMPRP in the tree in (11) (and similar trees) below. In the present context, nothing hinges on these assumptions, as other manners of technical implementation are possible (e.g. Caha 2009; Pantcheva 2011). Note, however, that Starke (to appear) develops an account of the suffix-prefix contrast that crucially relies on the head-phrase distinction as in (10b) and (11).

(13) a. < /kam/, [$_{\text{QP}}$ [$_{\text{aP}}$ a √]] , LITTLE >
b. < /tar/, [$_{\text{CMPRP}}$ CMPR] >
c. < /in/, [$_{\text{SPRLP}}$ SPRL] >

The minimal difference with English is that the Persian superlative suffix only spells out the SPRL feature and not the CMPR feature. As a result, when SPRLP is merged, this node cannot be spelled out by *-in* as long as SPRLP contains CMPRP, due to the Superset Principle: the lexical tree of *-in* does not contain the syntactic tree as a constituent. For SPRLP to spell out, CMPRP has to raise in a roll-up fashion (Pearson 2000; Aboh 2004; Travis 2006), rescuing the comparative ending *-tar* from being overwritten by the superlative one, as happens in English. The result is the morphological stacking of the two affixes.

(14)

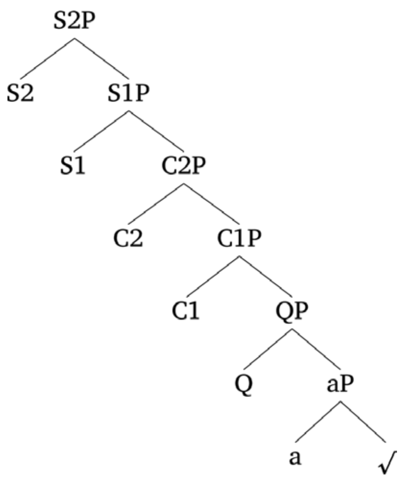


The way the English-Persian contrast is derived thus provides support for the nanosyntactic tenet that language variation can be reduced to the size of lexically stored trees (Starke 2014b).[7]

3 The proposal in a nutshell

In order to derive the *ABA-generalization of root suppletion, we need to first develop a nanosyntactic account of root suppletion. This account consists of a number of ingredients already mentioned in the previous section, but in addition requires a refinement of the Containment Hypothesis. This refinement consists in a more articulated syntactic structure, that splits up both the CMPR and the SPRL head into two heads, which we call S1 and S2 (for the superlative) and C1 and C2 (for the comparative). This yields the following functional sequence:

(15)



[7] Bobaljik's account of English-type languages is that the comparative morpheme has a contextual zero allomorph that is inserted in the presence of SPRL (Bobaljik 2012: 34). Persian-type languages do not have such a null allomorph.

Our evidence concerns cases where regular comparative and superlative exponents show a particular kind of allomorphy, namely one where part of the regular exponent gets truncated, leading to a long and short version of the exponent. We illustrate this phenomenon with two such cases, one involving the comparative (the Czech comparative ending *-ějš-*) and one the superlative (the Latin superlative ending *-issim-*). The Czech comparative ending may be truncated to *-š-* in certain contexts, the Latin superlative one to *-im-*.

We argue that this kind of allomorphy is to be accounted for by assuming that the relevant exponents are in fact composed of two separate parts, which each spell out a separate feature. In the Czech comparative, *-ěj-* spells out C1 and *-š-* spells out C2. The Latin superlative ending *-issim-*, in contrast, consists of three different parts: *-i-ss-im-*. The first part is the comparative ending, which is contained in the superlative (in the manner of the Persian case discussed above). The second part, *-ss-*, spells out S1, and *-im-* spells out S2.

Support for this analysis comes from the phenomenon of root suppletion. Both in Czech and in Latin suppletive roots are incompatible with the full-length regular exponent, and require the truncated allomorph (e.g. Latin *parv-us, min-im-us* 'small, smallest', vs the regular *alt-i-ss-im-us* 'highest'). We show that the interaction between root suppletion and suffix allomorphy can be explained by assuming a difference in the size of the constituent that the relevant exponents spell out. In particular, suppletive roots spell out a slightly larger structure than nonsuppletive ones. This then leads to the regular morpheme having to spell out fewer features, which explains its truncation.

In addition to providing a principled explanation for the correlation between root suppletion and truncation, we show how this analysis provides a straightforward explanation for the absence of ABA-patterns with root suppletion. It will also be shown to allow ABC patterns, as well as account for the existence of two types of ABB patterns in Latin.

4 Splitting up CMPR

4.1 Evidence from Czech

The proposal we make for splitting CMPR has independently been made by Caha (2016), who adduces some interesting evidence for it from the morphology of Czech. The comparative in Czech is formed with the suffix *-(ěj)š-*, an ending that contains an optional element *-ěj-*.[8] The final *-í/-ý* in the examples below is an agreement morpheme, that spells out Case, number and gender features.

(16)	POS	CMPR	SPRL	
	červen-ý	červen-ějš-í	nej-červen-ějš-í	'red'
	hloup-ý	hloup-ějš-í	nej-hloup-ějš-í	'stupid'
	moudr-ý	moudř-ejš-í	nej-moudř-ejš-í	'wise'

In this section, we present four pieces of evidence showing that the exponent *-ějš-* consists of two parts (see also Pancheva 2014).

(17)
a. *-ěj-* disappears with suppletive roots
b. *-ěj-* disappears in cases where the root shortens
c. *-ěj-* can disappear non-predictably
d. *-š-* disappears with comparative adverbs

Let us illustrate these in turn. The first case is that where a suppletive root appears in the comparative and the superlative. In such cases, the *-ěj-*exponent remains systematically absent.

[8] When *-ěj-* appears in the suffix, it causes palatalisation of the preceding consonant, as indicated by writing it as *-ěj-* in isolation. For example, when it attaches to roots ending in *r*, it triggers a change of *r* to *ř*.

(18)

POS	CMPR	SPRL	
dobr-ý	lep-š-í	nej-lep-š-í	'good'
špatn-ý	hor-š-í	nej-hor-š-í	'bad'
mal-ý	men-š-í	nej-men-š-í	'little, small'
velk-ý	vět-š-í	nej-vět-š-í	'big'

The second case is one where the root undergoes a templatic change in the comparative, which correlates with the absence of the *-ěj*-morpheme (Scheer 2001).[9]

(19)

POS	CMPR	
blízk-ý	bliž-š-í	'close'
dlouh-ý	del-š-í	'long'
vys-ok-ý	vyš-š-í	'tall'
hloup-ý	hloup-ěj-š-í	'stupid'
div-ok-ý	div-oč-ej-š-í	'wild'

In the first three of these examples, we see a shortening of the root in the comparative as compared with that in the positive degree, which involves the vowel and/or the consonantic template (*blízk-bliž, dlouh-del*), or the *-ok*-suffix (*vysok-vyš*). The final two examples show the absence of these shortening phenomena in the presence of the *-ěj*-exponent.

The third case is one where *-ěj-* remains absent, unpredictably, with otherwise regular comparatives.[10]

(20)

POS	CMPR	SPRL	
star-ý	star-š-í	nej-star-š-í	'old'
such-ý	suš-š-í	nej-suš-š-í	'dry'
tvrd-ý	tvrd-š-í	nej-tvrd-š-í	'hard'
drah-ý	draž-š-í	nej-draž-š-í	'expensive'
tich-ý	tiš-š-í	nej-tiš-š-í	'silent'

Finally, the fourth case is that of comparative adverbs, where the *-š*-exponent is systematically absent:

(21)

Cmpr Adj	Cmpr Adv	
červen-ěj-š-í	červen-ěj-i	'redder/in a redder manner'
hloup-ěj-š-í	hloup-ěj-i	'more stupid(ly)'
moudř-ej-š-í	moudř-ej-i	'wiser/more wisely'
rychl-ej-š-í	rychl-ej-i	'faster'

The adjectives in the first column contain the regular endings, but in the presence of the adverbial ending *-i*, the *-š*-exponent systematically disappears.

These data provide rather transparent morphological evidence that the Czech comparative suffix *-ějš-* needs to be decomposed into two separate exponents: *-ěj-š-*. In the following section, we account for this state of affairs by splitting up CMPR.

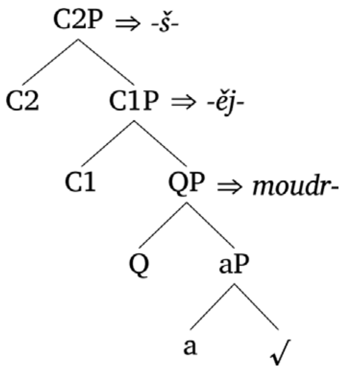
[9] The change is called templatic because it involves a shortening in the comparative of the stem of the positive degree, rather than the appearance of a lexically unrelated, suppletive, stem in the comparative, as in the cases in (18). The distinction is merely descriptive, and not intended to reflect any analytical distinction.

[10] The palatalization of velars before *-š* is regular.

4.2 The regular comparative

The Czech evidence suggests that there are two features involved in the derivation of the comparative, and provides evidence for the structure we proposed in (15) above. We illustrate this by first considering an example of a regular comparative (*moudr-ěj-š-(í)* ‘wiser’). The relevant tree is given in (22), with the corresponding lexical entries in (23):

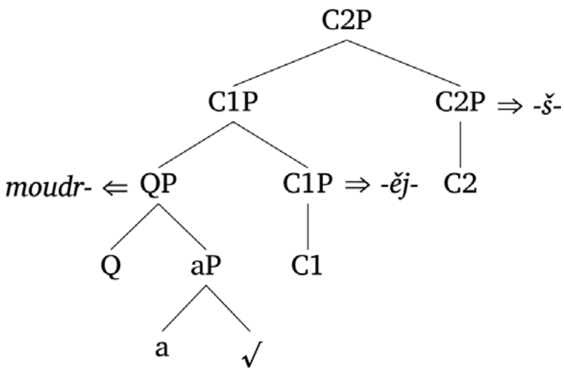
(22)



(23) a. < /-š-/, [$_{C2P}$ C2] >
b. < /-ěj-/, [$_{C1P}$ C1] >
c. < /moudr-/, [$_{QP}$ Q [$_{aP}$ a √]] , WISE >

The lexical item *moudr-* spells out the QP-node, whereas *-ěj-* spells out the C1-feature, and *-š-* the C2-feature. Successive spellout-driven movements of the QP to the left (roll-up fashion) will eventually derive the correct output *moudr-ěj-š-* (as explained in detail for the case of Persian *kamtarin* ‘littlest’ above; see (14) and surrounding discussion). The resulting structure after movement is given in (24):

(24)



4.3 Suppletion

We next show how our proposal regarding the comparative allows a new account of root suppletion. Before we can discuss the Czech evidence, we need to say something about suppletion at a more general level. There are two types of suppletion, portmanteau suppletion and root suppletion, and both types are found with comparatives. An example of both is given in (25):

(25) a. bad worse
b. good bett-er

With portmanteau suppletion, as in (25a), no (regular) affix is recognisable in the suppletive form, which is a portmanteau for the combination root + suffix. With root suppletion, a change in the shape of the stem (*good-bett*) is accompanied by the regular comparative ending.

Portmanteau suppletion has been dealt with in nanosyntax by the mechanism of pointers inside lexical items, which point to, or contain, other lexical items (Starke 2009, 2014a). However, nanosyntax so far has not developed an adequate account of root suppletion. We shall argue that such an account can be developed under the assumption that the comparative involves two separate heads, C1 and C2.

Let us first look at portmanteau suppletion, i.e. the case of *bad-worse*, as our account of root suppletion will be partly based on it. The pointers approach assumes that the lexical item of *worse* (given in (26a)) contains pointers to the lexical items for *bad* on the one hand, and the regular comparative morpheme *-er* on the other:[11]

(26) a. $<_{\mathbf{129}}$ /wɜːrs/, $[_{C2P}$ **127 128**] $>$
b. $<_{\mathbf{127}}$ /bæd/, $[_{C1P}$ C1 $[_{NegP}$ Neg $[_{QP}$ Q $[_{aP}$ a √]]]] , BAD $>$
c. $<_{\mathbf{128}}$ /ər/, $[_{C2P}$ C2] $>$

A pointer is like a page number in the index of a book: it refers to a location in the book where the actual information pertaining to a concept can be found. In the representations in (26), the pointers take the form of numerical indices (127 and 128). In terms of the book index analogy just mentioned, one could say that the index entry for *worse* refers the reader to two distinct page numbers in the book: one where *bad* is discussed (page 127), and one where the regular comparative suffix is discussed (page 128).

A more transparent way of representing this relationship between pointer and pointee replaces the numerical indices by the names of the relevant lexical items. That is, instead of saying that **worse** points to 127 and 128, we will say that **worse** points to **bad** and **er** (with the names of the lexical items given in **bold**). This alternative mode of representation is given in (27), and it is the one we shall be using from now on.

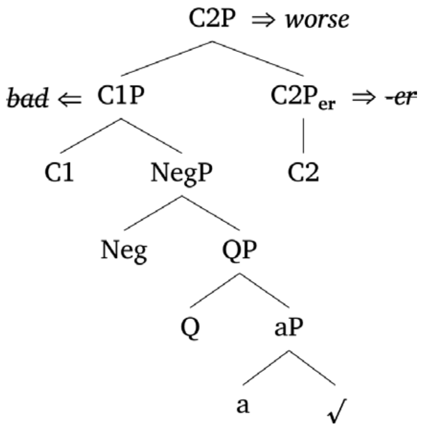
(27) a. $<_{\mathbf{worse}}$ /wɜːrs/, $[_{C2P}$ **bad er**] $>$
b. $<_{\mathbf{bad}}$ /bæd/, $[_{C1P}$ C1 $[_{NegP}$ Neg $[_{QP}$ Q $[_{aP}$ a √]]]] , BAD $>$
c. $<_{\mathbf{er}}$ /ər/, $[_{C2P}$ C2] $>$

Whatever the notational device used, lexical entries with pointers provide an elegant way of expressing the lexical relatedness of *bad* and *worse*, i.e. the fact that *worse* is the comparative of *bad* and not of *wise* or any other adjective. In addition, they formalise the traditional observation that *worse* suppletes for, or overrides, the regular form *bad + er*.

The latter fact becomes clear upon considering the derivation of *worse*. After C1P has been merged and spelled out as *bad*, the syntax merges C2, creating $C2P_{er}$ (see (28)). The lexicon is consulted, no match is found, and C1P undergoes spellout-driven movement, adjoining to $C2P_{er}$. $C2P_{er}$ can now be spelled out as *-er*. The lexicon is likewise consulted for the top C2P-node, and (27a) is found, resulting in the spellout as *worse* for this node. This spellout overrides the earlier spellout of *bad* and *-er*. Note that the presence of the pointer will ensure that *worse* will only be spelled out as the comparative of *bad*, and not that of any other adjective, since we do not want *wis + er* etc. to be be overwritten by *worse*. This derivation is represented in (28):

[11] We assume that negative adjectives spell out a Neg feature; see De Clercq & Vanden Wyngaerd (2017a) for discussion. In section 4.5 below, we shall motivate why we take *bad* to spell out C1P, and the suffix only the C2 feature.

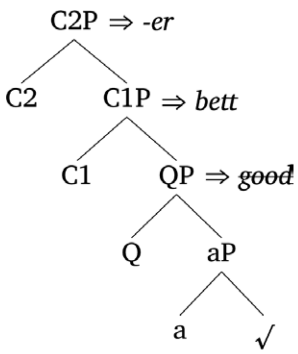
(28)



A regular case like *wiser* will not find a (suppletive) spellout in the lexicon for the top C2P node in a post-movement tree like (28). This is unproblematic, however, since each feature has a spellout.

Root suppletion requires a slightly different analysis. On the one hand, the mechanism of the pointer is also needed, in order to capture the lexical relatedness of *good* and the suppletive root *bett-*. On the other hand, we do not want *bett-* to override the regular spell-out of the comparative suffix, in the manner of *worse*. Our proposal is that the suppletive root in comparatives spells out C1P, a node that is slightly smaller than C2P (thus making it different from a case like *worse*), but slightly larger than QP (see also Caha 2016). The syntactic tree and the corresponding lexical items are given below:[12]

(29)



(30) a. $<_{\text{bett}}$ /bɛt/, $[_{C1P}$ C1 **good**]] $>$
b. $<_{\text{good}}$ /gʊd/, $[_{QP}$ Q $[_{aP}$ a √]] , GOOD $>$
c. $<_{\text{er}}$ /ər/, $[_{C2P}$ C2] $>$

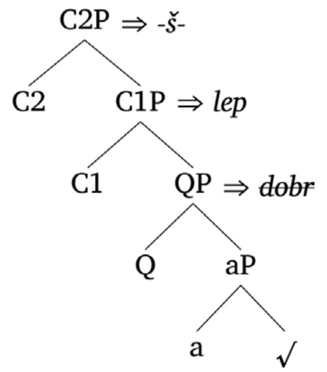
What (30a) states is that *bett-* is the (suppletive) spellout of the C1-feature and the adjective *good*. This lexical item expresses the lexical relatedness of *bett-* to *good*, as in the case of *bad-worse* (and comparable to the way this is done by a rule of exponence as in (4b) above). The main difference with *worse*, however, is that *bett-* does not spell out C2P. In order to derive the full comparative form, then, a different lexical item (i.e. (30c)) is needed to spell out the C2 feature. This explains the presence of the regular *-er* suffix in *bett-er*. The way the derivation works is that, when QP is merged, the lexicon is consulted, and *good* spells out QP. Then, at the merger of C1P, *good* is overwritten by the suppletive

[12] A caveat is in order about the tree in (29), and many related trees below. The double arrows indicating phrasal spellout obliterate an important distinction, namely that *bett* spells out the entire C1P, whereas the suffix *-er* only spells out C2P after movement of C1P out of it. We mark this distinction, rather subtly, by prefixing the suffix with a dash (*-er*) to indicate its suffixal nature, which in turn translates as movement of the complement of the head of the relevant constituent.

form *bett-*; due to the presence of the pointer in *bett-*, this can only happen if at a prior stage QP was spelled out as *good*. At the merger of C2P, the comparative suffix *-er* is spelled out, modulo the raising of C1P to adjoin to the left of C2P.

With this much in place, let us return to the Czech evidence discussed above. The analysis of root suppletion we propose directly explains the first piece of evidence we adduced above in support of the claim that Czech *-ějš-* needs to be decomposed into ěj + š, namely the fact that suppletive roots are systematically incompatible with the *-ěj*-exponent (see the examples in (18) above). To see this, consider the tree and the lexical items for the Czech pair *dobr-lep-* 'good-bett-':

(31)



(32) a. $<_{\mathbf{lep}}$ /lep/, $[_{C1P}$ C1 **dobr**]] $>$
b. $<_{\mathbf{dobr}}$ /dobr/, $[_{QP}$ Q $[_{aP}$ a √]] , GOOD $>$

Here too, *lep-* is the spellout of C1P provided the QP contained in it was spelled out as *dobr-* 'good' in the spellout cycle before it, i.e. it spells out the C1 feature and $QP_{\mathbf{dobr}}$. Without the pointer to *dobr-*, *lep-* would be able to spell out any adjective, contrary to fact.[13] Since the suppletive root *lep-* already spells out C1, *-ěj-* cannot also spell out the same feature. The suppletive root 'eats up' the *-ěj*-morpheme, as it were, it being a portmanteau for the regular root *dobr* and the C1 feature. This results in the obligatory absence of *-ěj-* with suppletive roots.

The analysis extends straightforwardly to the cases in (19) above, where the comparative morpheme *-š-* attached directly to a shortened version of the stem, without an intervening *-ěj-*. Here, too, we assume that the shortened stem spells out C1P, and that the shortened stem is related to its long version by means of a pointer (as in the lexical entries in (32)).[14] The cases in (19) are, then, to all intents and purposes identical to cases of root suppletion.

As noted above, Czech also has a class of adjectives which includes *star-* 'old', and which have a comparative *star-š-í*, i.e. without the *-ěj-* exponent. Which adjectives belong to this class is unpredictable. We propose to account for them by assuming that the lexical entry of the adjectives in this class has the same size as that of suppletive roots, i.e. C1P, but without a pointer.

(33) $<$ /star/, $[_{C1P}$ C1 $[_{QP}$ Q $[_{aP}$ a √]]]] , OLD $>$

There is no pointer here because the lexicon contains no item that is lexically related to *star-* 'old', and that it is in a suppletive relationship with. As a result, there is no root

[13] A reviewer asks what would happen if a language had (32a) but not (32b). Such a situation could not lead to spellout, since the pointer in (32a) would point to a nonexisting address.

[14] It may appear counterintuitive that the shorter root is the one that spells out the larger structure. However, such subtractive morphology is not uncommon: see Postma (2016) and references cited there.

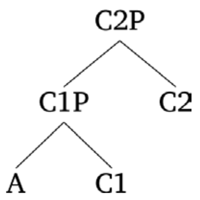
suppletion in the comparative in this and related cases. Because of the Superset Principle, which allows lexical items to spell out subtrees contained in them (see (7) above), this lexical item will be able to spell out both the positive degree (i.e. QP) and C1P, which enters into the derivation of the comparative. The fact that *star*- can spell out C1P explains why the -*ěj*-exponent remains absent. That it must remain absent follows from the specifics of the spellout algorithm, which prefers phrasal spellout without movement over one with movement. There is no movement when *star*- spells out C1P. A derivation with movement is possible in principle, as when *star*- would spell out QP, then raise to adjoin to C1P, yielding the spellout *star-ěj*-. However, the movement derivation will only be triggered when there is no spellout for C1P, which is not the case here. As a result, *star-ěj*- will not be derived. The reason we do not see suppletion with adjectives like *star*- 'old' is that they do not contain a pointer to another, smaller, lexical item with a different phonology, to which they are lexically related.

4.4 Possible alternative analyses

In this section, we consider two possible alternative analyses of root suppletion in comparatives, one based on rules of contextual allomorphy targeting terminals, and one based on fusion. We shall show that the former of these alternatives does not explain why Czech suppletive and shortened roots are incompatible with -*ěj*-, whereas the latter faces a timing paradox.

We start by discussing the alternative in terms of rules of contextual allomorphy targeting terminals. Assume for concreteness the following structure for the comparative, which is identical to (2) above, except that the CMPR head has been split into C1 and C2:

(34)



The rule for the insertion of the suppletive *lep*- would need to be slightly modified from (4b) above to make reference to the adjacent C1-head rather than CMPR:

(35) a. $\sqrt{\text{GOOD}}$ → *dobr-*
b. $\sqrt{\text{GOOD}}$ → *lep-*/ ___] C1]

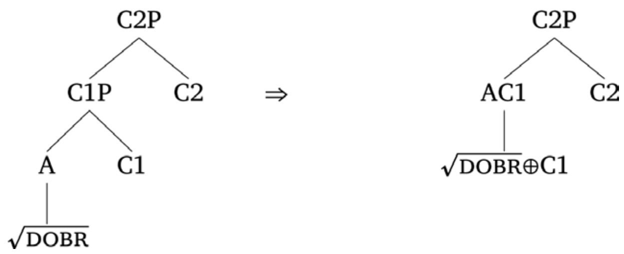
The problem is with the rule of exponence for C1. In the general case, C1 will spell out as -*ěj*- in Czech; this is achieved by (36a). But the insertion of a suppletive root at A has to pre-empt the rule that inserts -*ěj*- at C1 next up in the cycle. One way of achieving that is to supplement the general rule (36a) with the context-sensitive rule in (36b), which says that C1 is spelled out as zero if the preceding head has been spelled out as *lep*-.

(36) a. C1 → ěj
b. C1 → Ø / *lep*] ___

Given the Elsewhere Principle, C1 will be realised as Ø with *lep*-, ultimately deriving *lep-š-í* 'better'. The problem with (36b) is that it will have to be duplicated for each root that does not have -*ěj*-. It is clear, however, that such a listing of rules misses a generalisation. It is a pure coincidence under this approach that suppletive and shortened roots are systematically incompatible with -*ěj*-, since it depends on the existence of a collection of rules of the form in (36b). Nothing in this type of approach prevents the existence of a suppletive root with *-ěj-*: Czech could have a suppletive pair like (35), and at the same time lack (36b). This is because (36b) is a rule that is in principle unrelated to the rules in (35), since it spells out a different terminal.

The second alternative analysis invokes the application of fusion prior to lexical insertion (Halle & Marantz 1993). This operation transforms the structure (37) into one with a fused head:

(37)



The relevant rules of exponence are given in (38).

(38) a. $\sqrt{\text{DOBR}}\oplus\text{C1} \rightarrow$ *lep*
b. $\sqrt{\text{DOBR}} \rightarrow$ *dobr*
c. C1 → ěj
d. C2 → š

What the combined operation of fusion and (38a) do is treat *lep-* as a portmanteau for $\sqrt{\text{DOBR}}$ and C1 (much like *worse* is a portmanteau for *good* and CMPR). The advantage of this approach is that the vocabulary item *lep-* now lexically contains C1, and therefore no spellout for C1 as *-ěj-* is needed or allowed (like in the phrasal spellout analysis adopted above). However, in order to derive the principled impossibility of *-ěj-* with suppletive roots, it must be the case that the fusion derivation of *lep-* (and suppletive roots generally) *must* be chosen over the fusionless alternative discussed earlier, and so an additional principle will be needed that has this effect.

More seriously, the fusion solution suffers from the timing paradox discussed in Caha (to appear). As we just saw, fusion precedes lexical insertion. Now fusion must apply in all and only those cases where a portmanteau is available in the lexicon. In the case at hand, these come in three different kinds: cases of root suppletion like *lep-* 'bett-', cases where the root is shortened (like *del-* 'long'), and cases where *-ěj-* idiosyncratically and unpredictably is absent (e.g. *star-* 'old'). All of this is idiosyncratic lexical information, which means that the rules manipulating the structure (like fusion) must know what the lexicon contains, in advance of lexical insertion.

This paradox is easily solved in the analysis with phrasal spellout, which we have assumed. The application of fusion does not require knowledge of what is in the lexicon in advance of lexical insertion, because fusion does not need to apply to begin with. This can easily be seen by comparing the input and the output of the fusion rule: the relevant heads that are brought under the same terminal after fusion already form a constituent prior to the application of fusion. The only motivation for fusion (in this case at least) would be to maintain the assumption that lexical insertion only targets terminals. Once that assumption is given up, and one accepts that lexical insertion can target the relevant phrasal node (C1P), the timing paradox vanishes. This is precisely what the analysis that we have presented does, and in doing so it derives the impossibility of *-ěj-* with suppletive and shortened roots in a principled way.

4.5 A note on periphrastic comparatives

The analysis we developed for Czech also has relevance for English, where morphological comparatives alternate with periphrastic comparatives. The alternation has been argued to relate to phonological properties, *-er* and *-est* suffixation only being possible with monosyllabic stems, and bisyllabic ones with a trochaic foot structure (e.g. *yellow* vs *polite*) (Aronoff 1976; Quirk et al. 1985). However, it has also been observed that the correlation with foot structure is not absolute (e.g. Bobaljik 2012: 164). For example, *ill* and *apt* are monosyllabic and gradable, but still resist *-er* suffixation, and disyllabic trochaic adjectives sometimes do and sometimes do not (*handsomer* vs **irksomer*). Experimental research done by Graziano-King (1999) shows that the main determining factor in the choice between the synthetic and the analytic comparative is frequency rather than phonological form (e.g. *older, longer* vs *more lax, more gaunt*).[15] This supports an analysis where the difference between morphological and periphrastic comparative is lexically determined.[16]

Following Caha (2016), we propose that the lexical difference in question is whether an adjective spells out QP or C1P. English adjectives that combine with *–er* in the comparative have an entry like *bett*, i.e. they spell out C1P, rather than QP. In contrast, adjectives that do not tolerate the morphological comparative are lexically smaller, i.e. they spell out QP. This minimal contrast between e.g. *smart* and *intelligent* is illustrated in (39):

(39) a. < /smɑːrt/, $[_{C1P}$ C1 $[_{QP}$ Q $[_{aP}$ a √]]] , SMART >
b. < /ɪntɛlɪdʒənt/, $[_{QP}$ Q $[_{aP}$ a √]] , INTELLIGENT >

The difference at issue is akin to the lexical difference that exists in Czech between adjectives that take *-ěj-š-* in the comparative, and those that (unpredictably) take just *-š-* (like *star-* 'old'): the former are lexically smaller (QP), the latter are lexically of the same size as a suppletive root (C1P).

The lexical entries for the comparative suffix and for *more*, the marker of the analytic comparative, are given in (40) (where we assume that *more* is a portmanteau for *much* and *er*):

(40) a. <$_{\mathbf{er}}$ /ər/, $[_{C2P}$ C2] >
b. <$_{\mathbf{more}}$ /mɔːr/, $[_{C2P}$ **much er**]]] >
c. <$_{\mathbf{much}}$ /mʌtʃ/, $[_{C1P}$ C1 $[_{QP}$ Q]] >

Putting (39) and (40) together, we see that a complete functional sequence is spelled out by the combination *smart + er* and *more + intelligent*, but not by *intelligent + er*. The

[15] Disyllabics ending in -y escape this frequency effect, in that they form morphological comparatives regardless of frequency (Graziano-King & Smith Cairns 2005: 348). In terms of the analysis to be proposed below, this could be accounted for by assuming that *-y* spells out a suffix of C1P size, i.e. a type that is compatible with the morphological comparative. In the same reasoning, the behaviour of trisyllabic adjectives could be a function of their morphological compositionality, and the fact that the suffixes in question spell out QP, i.e. require the periphrastic comparative. Support for such an approach could be found in the observation of Mondorf (2003: 284) to the effect that disyllabic adjectives ending in /l/ have a periphrastic comparative when they are morphologically complex (e.g. *careful* or *partial*), but not necessarily when they are monomorphemic (e.g. *gentle* or *humble*). Investigating this hypothesis in detail, however, is beyond the scope of the present paper. See Culpeper & Leech (1997); Mondorf (2003, 2009); LaFave (2005); Hilpert (2008); Matushansky (2013) for discussion and references.

[16] In taking the distinction between morphological and periphrastic comparatives to be a lexically determined one, we concur with Bobaljik (2012: 164). He proposes to implement the relevant lexical distinction by means of a diacritic on adjectives indicating that they have a morphological comparative (undergo Merger, in Bobaljik's terms). On the further assumption that diacritics are allowed to percolate up, he accounts for the possibility of *unhappier*, where a morphological comparative is allowed in virtue of the presence of the diacritic, and in spite of the number of syllables in *unhappy*. Our analysis is different from Bobaljik's in that we do not need a diacritic to achieve the desired effects.

functional sequence for an adjective in the comparative is <C2, C1, Q, a, √>. The f_{seq} of *smart+er* provides exactly that: *-er* spells out <C2>, and *smart* spells out the span <C1, Q, a, √>. Similarly, *more* spells out the span <C2, C1, Q> and *intelligent* spells out <Q, a, √>. In either case, adding both spans yields the full sequence <C2, C1, Q, a, √>.[17] Crucially, however, the combination *intelligent+er* fails because there is no spellout for the C1 feature.

In sum, the difference between morphological and periphrastic comparatives in English reduces to a lexical difference, in particular the size of the lexical tree that the adjective spells out. This difference is motivated by cross-linguistic evidence, in that Czech makes the same lexical distinction in the adjectives. Czech and English differ, however, in their lexicon, i.e. the set of lexical items that spell out the features that enter into the derivation of the comparative. These lexical items package these features differently in different languages. Language variation is thus, once again, seen to reduce to the size of lexically stored trees (Starke 2014b).

5 Splitting up SPRL: Evidence from Latin

If our approach to root suppletion is on the right tack, we should be able to extend it to cases of root suppletion in the superlative. In this section, we show how this can be done by assuming that Bobaljik's SPRL head, like the CMPR head, needs to be split up into two distinct heads, S1 and S2 (see (15) above). Our empirical evidence in this case comes from Latin. Latin shows a phenomenon in the superlative, which is strikingly similar to the one we discussed above for the Czech comparative. Its regular superlative suffix has a long form and a short one, and the long one is systematically excluded with suppletive roots. This once again suggests that the regular ending needs to be decomposed into two distinct endings, which each spell out a different feature.

The regular Latin comparative is derived by suffixing the base with *-ior/iōr* or *-ius* (for nominative singular neuter); the superlative has the suffix *-issimus*. Both the comparative and the superlative suffix show agreement with the noun. Adjectives in the positive and the superlative degree are declined like nouns of the first and second declension class. This is illustrated for the regular adjective *altus* 'high' in Table 1 for the first declension class (feminine), and in Table 2 for the second declension class (masculine and neuter). The tables show the identity of the adjectival agreement markers with the Case, number and gender markers of the nouns.

Comparative *-ior/iōr/-ius* shows the agreement markers of nouns of the third declension class (non-*i* stems); this is shown in Table 3. The declination for the masculine and the feminine is shown in the first column, that of the neuter in the third. A corresponding noun is in the column to the right of the adjective. Apart from the nominative and the accusative, the endings are identical across all genders.

A straightforward conclusion to be drawn from these data is that the superlative suffix is *-issim-* plus an agreement marker. Things are less clear for the comparative marker, however. The fact that *-ior/iōr* appears as *-ius* in the neuter (NOM.SG and ACC.SG) shows that at least one of these exponents also spells out a gender feature. We see two possible analyses here. The first is that the marker of the comparative is *-ior/iōr*, which gets overwritten by *-ius* in one particular case, namely in NOM.SG and ACC.SG. This is the traditional view in analyses of Latin comparative morphology. The alternative view is that *-ior/iōr/-ius* is to be segmented into part *-i-* that spells out the comparative, and a part *-or/-ōr-/-us*, which

[17] In the case of *more+intelligent*, there is one feature that is present in both exponents, namely Q. It appears that a surplus of features is not fatal, whereas a shortage is. This explains the difference between ??*more smart* and **intelligenter*. It may also account for the existence of double comparatives like *more louder* (see Corver 2005).

Table 1: Agreement markers of the first declension class.

		SG		PL	
		'high(est)'	**'rose'**	**'high(est)'**	**'rose'**
SG	NOM	alt-(issim-)a	ros-a	alt-(issim-)ae	ros-ae
	ACC	alt-(issim-)am	ros-am	alt-(issim-)ās	ros-ās
	GEN	alt-(issim-)ae	ros-ae	alt-(issim-)ārum	ros-ārum
	DAT	alt-(issim-)ae	ros-ae	alt- (issim-)īs	ros-īs
	ABL	alt- (issim-)ā	ros-ā	alt- (issim-)īs	ros-īs

Table 2: Agreement markers of the second declension class.

		MASC		NEUT	
		'high(est)'	**'grandfather'**	**'high(est)'**	**'gift'**
SG	NOM	alt-(issim-)us	av-us	alt-(issim-)um	dōn-um
	ACC	alt-(issim-)um	av-um	alt-(issim-)um	dōn-um
	GEN	alt-(issim-)ī	av-ī	alt-(issim-)ī	dōn-ī
	DAT	alt-(issim-)ō	av-ō	alt-(issim-)ō	dōn-ō
	ABL	alt-(issim-)ō	av-ō	alt-(issim-)ō	dōn-ō
PL	NOM	alt-(issim-)ī	av-ī	alt-(issim-)a	dōn-a
	ACC	alt-(issim-)ōs	av-ōs	alt-(issim-)a	dōn-a
	GEN	alt-(issim-)ōrum	av-ōrum	alt-(issim-)ōrum	dōn-ōrum
	DAT	alt-(issim-)īs	av-īs	alt-(issim-)īs	dōn-īs
	ABL	alt-(issim-)īs	av-īs	alt-(issim-)īs	dōn-īs

Table 3: Agreement markers of the third declension class.

		M, F		NEUT	
		'higher'	**'king'**	**'higher'**	**'noun'**
SG	NOM	alt-ior	rēx	alt-ius	nōmen
	ACC	alt-iōr-em	rēg-em	alt-ius	nōmen
	GEN	alt-iōr-is	rēg-is	alt-iōr-is	nōmin-is
	DAT	alt-iōr-ī	rēg-ī	alt-iōr-ī	nōmin-ī
	ABL	alt-iōr-e	rēg-e	alt-iōr-e	nōmin-e
PL	NOM	alt-iōr-ēs	rēg-ēs	alt-iōr-a	nōmin-a
	ACC	alt-iōr-ēs	rēg-ēs	alt-iōr-a	nōmin-a
	GEN	alt-iōr-um	rēg-um	alt-iōr-um	nōmin-um
	DAT	alt-iōr-ibus	rēg-ibus	alt-iōr-ibus	nōmin-ibus
	ABL	alt-iōr-ibus	rēg-ibus	alt-iōr-ibus	nōmin-ibus

spells out part of the agreement complex. Under this view, the comparative suffix is just *-i-*, which is then morphologically contained in the superlative suffix, which needs to be segmented as *-i-ssim-us*.

There is an empirical observation to be made regarding the agreement complex, which we believe favours the second view just sketched. This observation concerns the fact that comparative adjectives show a different set of agreement markers than positive and superlative degree ones. This is a fact to be explained. It can be accounted for, we believe, by assuming that *-or/-ōr-* is, among other things, a spellout of the declension class feature, which in the nouns in Table 3 is spelled out by the nominal root. A second piece of evidence in support of this analysis is found in the genitive plural, which appears as *-ōrum* in the second declension class, and as *-um* in the third and fourth declension class. This difference can be made sense of by assuming that *-ōr-* in the genitive plural marker *-ōr-um* is the same thing: a marker of the declension class, with *-um* the marker of genitive plural.[18] We shall assume in the remainder of this paper that this analysis is correct, i.e. that the marker of the comparative is *-i-*, which is contained in the marker of the superlative, and that *-ōr-* is not a marker of the comparative, but a noun class marker. At the same time we must point out, however, that this analysis is orthogonal to our main claim, which concerns the internal makeup of the superlative part of the functional sequence, and the way *ABA can be derived from this. Should there turn out to be a compelling argument to take the marker of the comparative in Latin to be *-ior/iōr*, then our analysis could easily be rephrased, with *-ior/iōr* spelling out the C2 feature, and the two parts of the superlative marker being *-iss-* and *-im-*. The *-iss*-suffix would then override the comparative suffix, in the manner of English *-est*.

With this in mind, let us return to the matter of root suppletion and the internal structure of the superlative. Adjectives with root suppletion consistently reduce the superlative *-ssim-* morpheme to *-im-* (with the exception of *malus-pējor-pessimus*, to which we return):

(41)

POS	CMPR	SPRL	
bonus	mel-i-or	opt-im-us	'good'
parvus	min-or	min-im-us	'small'
paucus	min-or	min-im-us	'little'
multus	plūs	plūr-im-us	'much'
malus	pē-j-or	pe-ss-im-us	'bad'

This suggests that *-ssim-* is internally complex and composed of two different exponents *-ss-* and *-im-*, each spelling out a different feature. Strikingly, only two forms in (41) have the comparative exponent *-i-*: one is in *mel-i-or*, which is part of an ABC-pattern, and the other occurs in *malus-pējor-pessimus*, which also has the complete (nontruncated) superlative ending *-ss-im-*. The other forms have neither the comparative ending *-i-*, nor the *-ss-* part of the superlative ending. The analysis of suppletion that we propose will provide an account for this contrast.

There is another set of cases, which are nonsuppletive, but which share the characteristic with the suppletive adjectives that the superlative ending is truncated to *-im-* from the regular *-ss-im-*. A first subclass of these comprises some third declension adjectives in *-ilis*:

(42)

	CMPR	SPRL	
facilis	facilior	facillimus	'easy'
difficilis	difficilior	difficillimus	'hard, difficult'
(dis)similis	(dis)similior	(dis)simillimus	'(dis)similar'
gracilis	gracilior	gracillimus	'slender'
humilis	humilior	humillimus	'humble'

All of these adjectives are *i*-stem adjectives, i.e. their stem plausibly ends in a vowel (e.g. *facili-*), which can be seen in the presence of this vowel in places in the declension where

[18] Nouns in the class that have -ō*rum* would under this approach be smaller, i.e spell out less features, than nouns with *um* in the genitive plural.

it cannot be attributed to the suffix (e.g. NOM.PL.NEUT *facili-a* ‘easy’ vs *nōmin-a* ‘nouns’, or GEN.PL *facili-um* ‘easy’ vs *reg-um* ‘kings’).

A second subclass comprises adjectives ending in *-er*, which have a superlative in *-errimus* (rather than *-erissimus*):

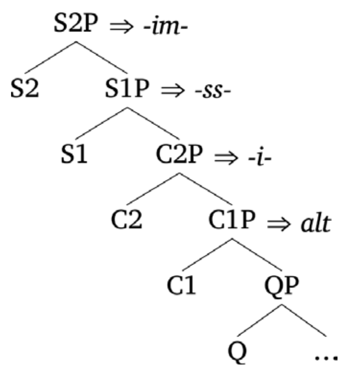
(43)

	CMPR	SPRL	
celer	celerior	celerrimus	‘quick’
ācer	ācrior	ācerrimus	‘sharp’
miser	miserior	miserrimus	‘miserable’
pulcher	pulchrior	pulcherrimus	‘pretty’

Some of the adjectives in this subclass have an *i*-stem, whereas others do not (the horizontal line in (44) separates the *i*-stems, which are above the line, from the others).

To conclude this section, we discuss the derivation of the regular comparative and superlative. The relevant functional sequence and lexical items are given in (44) and (45):

(44)



(45) a. < /alt/, $[_{C1P}\ [_{QP}\ Q\ [_{aP}\ a\ \surd\ ]]]$, HIGH >
b. < /i/, $[_{C2P}\ C2\ ]$ >
c. < /ss/, $[_{S1P}\ S1\ ]$ >
d. < /im/, $[_{S2P}\ S2\ ]$ >

Each of the exponents spells out exactly one feature, except for the adjectival root *alt*-, which spells out C1P. The stacking of the suffixes in the mirror order of (44) is achieved in the usual fashion, i.e. by roll-up movement and subsequent spellout of the relevant affix. In spelling out C1P, *alt*- ‘high’ is like Czech *star*- ‘old’, and like the English adjectives that have a morphological comparative. The difference is that Czech and English only have a restricted set of adjectives in this class, whereas in Latin the majority of the adjectives belong to this class. Exceptions are, on the one hand, adjectives with root suppletion in the comparative and/or the superlative (which spell out QP, as we shall see shortly), and a limited set of adjectives that have a periphrastic comparative and superlative with *magis* ‘more’ and *maxime* ‘most’, respectively.[19]

6 The Comparative-Superlative Generalisation

The discussion of Latin superlatives affords an opportunity to see how our account of root suppletion fares with respect to Bobaljik’s Comparative-Superlative Generalisation (CSG) discussed in the introduction. In particular, we shall show how it is able derive the

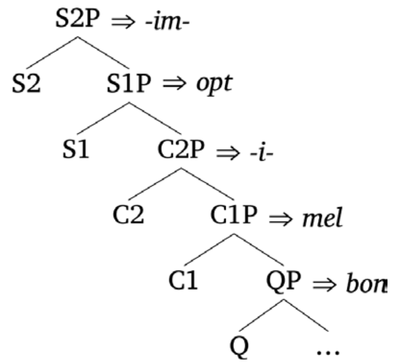
[19] Adjectives in this class are the ones ending in *-eus, -ius, -uus*, as well as *mirus* ‘miraculous’ and *rudis* ‘rude’ (Janssens & van de Vorst 1979).

attested ABB and ABC patterns. The ABB patterns are of special interest, as they occur in two different guises, and we shall show how our analysis is able to account for these two different patterns. We further show how ABA patterns are underivable in principle. Finally, we discuss AAB patterns. Our account does not rule these out, and we discuss some other empirical domains where AAB patterns are indeed attested. We conclude with a discussion of a potential AAB pattern in Welsh.

6.1 ABC patterns

We start our discussion of the CSG with the ABC-pattern of Latin *bonus-melior-optimus* 'good-better-best'. The tree representing this is given in (46), with the corresponding lexical entries in (47):

(46)



(47) a. < $_{\text{bon}}$ /bon/, [$_{\text{QP}}$ Q [$_{\text{aP}}$ a √]] , GOOD >
b. < $_{\text{mel}}$ /mel/, [$_{\text{C1P}}$ C1 [**bon**]] >
c. < /opt/, [$_{\text{S1P}}$ S1 [$_{\text{C2P}}$ C2 [**mel**]]] >

The lexical item *bon-* in (47a) spells out QP. Note that this is an exceptional type of adjective in Latin in that it is smaller than regular, nonsuppletive, adjectives, which spell out C1P. If a comparative layer is built on top, first C1P is merged and spelled out as *mel-*, which contains a pointer to *bon-*. Next C2P is merged and spelled out as *-i-* after raising of C1P, yielding *mel-i*. This will give rise to the comparative form *mel-i-or* after agreement is added. For the addition of a superlative layer, first S1P is merged and spelled out as *opt-*: since the lexical entry for *opt-* contains the entire sequence from S1 down in virtue of containing S1, C2, and a pointer to *mel-*, this will override any earlier spellout. This explains why *optimus* has neither the comparative exponent *-i-* (i.e. the C2 spellout), nor the S1 exponent *-ss-*. Next, S2P is merged and spelled out as *-im-* after raising of S1P, yielding *opt-im-us*, after the addition of agreement morphology.

A question that can be raised at this point is why the C2P layer does not spell out as *opt- (ōr)*: given the Superset Principle, this is also a possible spellout, as the lexical item (47c) contains C2P as a subtree. This spellout is blocked due to the Elsewhere Principle, however, since the competing spellout *mel-i-(ōr)* provides a perfect match for the syntactic tree. Underlying this reasoning is the assumption that a spellout without superfluous structure but with movement (i.e. *mel-i*) wins against one with superfluous structure but without movement (*opt-*).

ABC patterns from other languages are given in (48) (Bobaljik 2012: 29):[20]

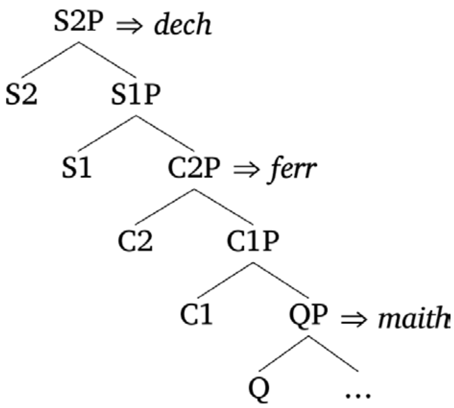
[20] The Welsh superlative is segmented by Bobaljik as indicated, suggesting that *-au* is an affix. However, the regular superlative ending in Welsh is *-af*, and it appears in all the irregular superlatives (Williams 1980: 33). The most straightforward analysis of this case, then, is one that treats it as an unanalysed portmanteau morpheme as well.

(48)

	POS	CMPR	SPRL	
Welsh	da	gwell	gor-au	‘good’
Old Irish	maith	ferr	dech	‘good’
M. Persian	xōb	weh/wah-īy	pahl-om/pāš-om	‘good’

At least the Old Irish case works slightly differently in that it involves portmanteau suppletion rather than root suppletion.

(49)



(50) a. <$_{\textbf{maith}}$ /maith/, [$_{QP}$ Q [$_{aP}$ a √]], GOOD>
b. <$_{\textbf{ferr}}$ /ferr/, [$_{C2P}$ C2 [$_{C1P}$ C1 [**maith**]]] >
c. <$_{\textbf{dech}}$ /dech/, [$_{S2P}$ S2 [$_{S1P}$ S1 [**ferr**]]] >

Such cases are explained straightforwardly. The lexical items of the portmanteau morphemes are slightly bigger than those of the root suppletion morphemes, i.e. they spell out an additional C2 or S2 feature. As a result, no suffix is needed (nor allowed) to spell out those features.[21]

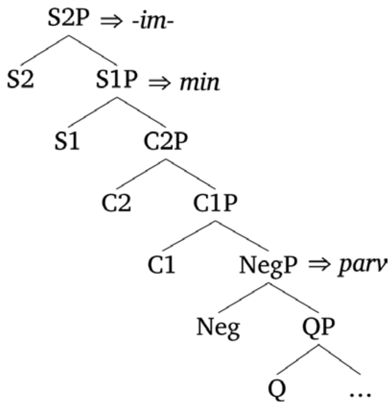
6.2 ABB patterns

Let us now turn to the more common ABB-patterns. As already indicated in our discussion above, there are two different types of ABB patterns in the Latin suppletive forms. Our analysis will be shown to account for them in a maximally straightforward fashion, without any additional assumptions or stipulations.

The first type of ABB pattern is instantiated by the series *parvus-minor-minimus* ‘small’. It is characterised by the same behaviour that is found in the superlative *optimus* of the previous section: the absence of both the comparative suffix *-i-* and the *-ss*-part of the superlative suffix. A straightforward way of accounting for this pattern is to assume that the relevant suppletive root spells out the same constituent as *opt-*, namely S1P, and everything contained in it. This means that its lexical item contains the constituent S1P, which contains the features <S1, C2, C1> on the one hand, and a pointer to the NegP-spellout *parv-* ‘small’ on the other.

[21] Our analysis may also shed a new light on the issue of extended exponence (Matthews 1972, 1991; Müller 2007; Harris 2017), i.e. the phenomenon that one feature appears to be expressed simultaneously by two exponents, as in Latin *mel-i-*, where both *mel-* and *-i-* spell out the comparative. If our analysis is on the right track, the impression of extended exponence is false, and different features underlie each exponent.

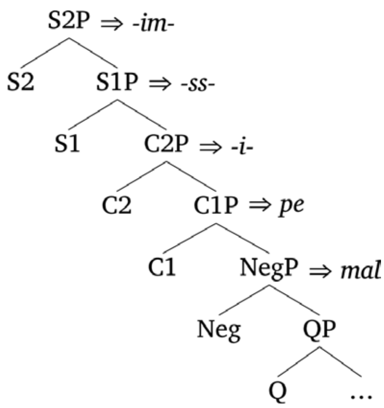
(51)



C2P will spell out as *min-* because of the Superset Principle; with agreement, this yields the comparative *min-ōr*. The spellout *parv-i-ōr* is blocked because it lacks an exponent that spells out the C1 feature.[22] The superlative S2P will spell out as *min-im-us*. These assumptions explain why this first type of ABB lacks both the regular comparative exponent *-i-* and the *-ss-* part of the regular superlative exponent. This is because both are overwritten by *min-*, i.e. *min-* 'eats up' all the regular exponents except for *-im-*.

The second type of ABB is instantiated by the series *malus-pējor-pessimus* 'bad'. It is different from the first type in two respects: we see the regular comparative exponent *-i-* in the comparative, and both exponents that together make the regular superlative, *-ss-im-*, in the superlative. This suggests that the suppletive root *pe-* spells out less structure, in particular C1P.

(52)



(53) a. $<_{\textbf{mal}}$ /mal/, $[_{\text{NegP}}$ Neg $[_{\text{QP}}$ Q $[_{\text{aP}}$ a √]]] , BAD$>$
b. $<_{\textbf{pe}}$ /pe/, $[_{\text{C1P}}$ C1 [**mal**]] $>$

This directly explains the fact that the regular comparative and superlative endings appear, yielding *pē-i-or* in the comparative and *pe-i-ss-im-us* in the superlative (which surfaces as *pessimus* through phonological reduction).

There are in other words two different ways of getting an ABB-pattern: one through suppletion at the C1P level, and one through suppletion a the S1P level. They are distinguished

[22] In this respect, it is crucial that *parv-* spells out NegP and not C1P. Although there is no problem in our analysis for the derivation of actual Latin, it does not rule out a hypothetical variant of Latin that would have an AAB series *parvus-parvior-minimus*. This could arise if the lexical item for *parv-* were of the size C1P, and assuming that a spellout without superfluous structure but with movement (i.e. *parv-i*) wins against one with superfluous structure but without movement (*min-*). See section 6.4 below for further discussion of AAB patterns.

in that suppletion at the C1P level preserves the comparative ending and does not lead to truncation of the superlative ending. Suppletion at the S1P level overrides both the comparative ending and the spellout of S1P, *-ss-*. The ABC-pattern arises through suppletion at both of these levels.

*6.3 *ABA patterns*

Let us now see why ABA is not a derivable pattern. This follows, in part from the standard logic excluding ABA patterns, and in part from general principles governing cyclic spellout. Given what we observed in the previous section, there are two forms that a hypothetical ABA pattern could take:

(54) a. bon-us mel-i-or bon-im-us
b. bon-us mel-i-or bon-i-ss-im-us

These differ in the superlative, in particular in the presence of the long or the truncated ending. Let us start by considering (54a), with a truncated ending in the superlative. This would require a lexical entry for *bon-* that is quite large for it to be able to spell out the superlative root, as well as the features that give rise to the truncated superlative ending (i.e. it would have to be of the same size as *min-* in (51) above, i.e. S1P). At the same time, *mel-* spells out C1P (as in the actual ABC pattern discussed above).

(55) a. <$_{\textbf{bon}}$ /bon/, [$_{S1P}$ S1 [$_{C2P}$ C2 [**mel**]]] >
b. <$_{\textbf{mel}}$ /mel/, [$_{C1P}$ C1 [$_{QP}$ Q [$_{aP}$ a √]] , GOOD >

Observe that *bon-* is also a candidate for spelling out C1P (i.e. the comparative), but *bon-* loses the competition against *mel-* because of the Elsewhere Principle. In particular, *mel-* has less superfluous structure than *bon-*, it being an exact match for the syntactic tree. Given this state of affairs, there is no way *bon-* can spell out the QP for the positive degree: if *mel-* wins against *bon-* in the comparative, it must also win against *bon-* in the positive degree, by standard Elsewhere reasoning. Hence the ABA pattern (54a) is underivable assuming the lexical items in (55).

The pattern (54b) is underivable as well, albeit for a different reason. Here the superlative has the long ending, which means that the lexical entry for *bon-* is smaller, i.e. QP (as in the actual ABC pattern discussed above):

(56) a. <$_{\textbf{bon}}$ /bon/, [$_{QP}$ Q [$_{aP}$ a √]] , GOOD >
b. <$_{\textbf{mel}}$ /mel/, [$_{C1P}$ C1 [**bon**]] >

The form *bonissimus* is now underivable because of the principles of cyclic spellout and override. After QP is spelled out as *bon-*, C1 is merged, creating C1P. C1P is then spelled out as *mel-*, overwriting *bon-*, thus blocking the derivation of *bonissimus*. There is no way *bon-* can return as a spellout at the higher level of S1P, since *bon-* does not spell out S1P, i.e. it is not even a candidate for insertion. In sum, neither of the logically possible ABA patterns in (54) is derivable.

The next question to consider is whether the logic that applies to Latin applies more generally, and whether ABA patterns are underivable in principle. To make this question a bit more concrete, let us consider the case of Bulgarian, which displays an ABA pattern (Bobaljik 2012: 126):[23]

[23] Bobaljik accounts for Bulgarian by assuming that, despite appearances, these are not morphological comparatives but analytical ones, which fall outside of the purview of the CSG. We do not wish to take that avenue, as it presupposes a distinction between word-level and sub-word level syntax that we do not subscribe to.

(57)

POS	CMPR	SPRL	
mnogo	po-veče	naj-mnogo	'much/many'

This type of pattern could in fact be derived in our framework by assuming that the comparative marker *po-* spells out only C2, whereas the superlative marker *naj-* spells out the span <S2, S1, C2, C1>, and under the assumption that derivations may backtrack and try an alternative strategy if a derivation does not converge (see Pantcheva 2011; Starke to appear). To see how this works, consider the following lexical items:[24]

(58)
a. <$_{\textbf{mnogo}}$ /mnogo/, [$_{QP}$ Q] >
b. <$_{\textbf{veče}}$ /veče/, [$_{C1P}$ C1 [**mnogo**]] >
c. < /po/, [$_{C2P}$ C2] >
d. < /naj/, [$_{S2P}$ S2 [$_{S1P}$ S1 [$_{C2P}$ C2 [$_{C1P}$ C1]]]]

As before, the positive degree *mnogo* 'much' spells out QP, and the suppletive root *veče* spells out C1P. In the comparative, the comparative prefix spells out C2. In the superlative, the spellout *naj-mnogo* spells out all the features of the superlative functional sequence: *mnogo* spells out QP, and *naj-* all the other features. However, to actually get this spellout, a rather complex derivation must be assumed.[25] At the merger of C1P, the lexicon is consulted, where (58b) *veče* is found, and spelled out. The derivation then proceeds to merge C2P (the details of which we skip in the interest of brevity), and, subsequently, S1P. The lexicon is consulted, but (58d) *naj-* is not a match, since it contains a C1 feature at its bottom, which has already been spelled out by the suppletive root *veče*. The only way for the superlative features S1 and S2 to get spelled out is by backtracking: the derivation is undone to the point of QP, which is spelled out as *mnogo*, and then instead of spelling out C1P with the suppletive root *veče*, a different strategy is tried, and the derivation proceeds without spellout of C1P. When S2P is reached, (58d) *naj-* can spell out this node, since C1 has not been spelled out earlier in the derivation.

In sum, our analysis does not entirely rule out ABA patterns, but they require a kind of derivation that is arguably costly; this fact plausibly explains the cross-linguistically rarity of the phenomenon. We also make a prediction: the existence of an ABA pattern as in Bulgarian rests on the assumption that the superlative marker spells out the C1 feature (as well as those above it, as indicated in (58d). A prediction made by this analysis is that ABA patterns are only possible in languages without root suppletion in the superlative. This is because a suppletive root in the superlative spells out S1P; as a result, only S2 is left to be spelled out by the superlative affix. But if the affix only spells out S2, the backtracking derivation needed for ABA cannot converge, since all the relevant features will not get spelled out. Put differently, a language with an ABA pattern is predicted not to display either ABB or ABC, and conversely: languages with root suppletion of the ABC or ABB type are predicted not to allow ABA. As far as we can tell, these predictions are borne out by the facts.

6.4 AAB patterns

The architecture and the principles of the theory outlined above do not block the derivation of AAB patterns. We shall illustrate this here by first looking at two different hypothetical cases, the first involving portmanteau suppletion, the other root suppletion.

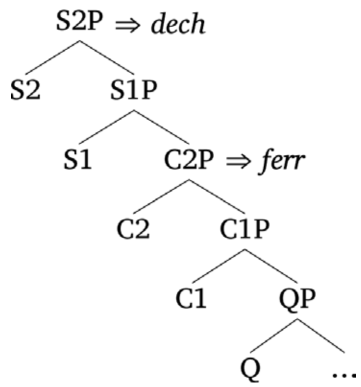
[24] We assume that the Q-word MUCH/MANY is a semi-functional adjective, i.e. one that lacks the categorial head and the root features. This is irrelevant to our point, however.

[25] An important issue, which we do not address here since it would lead us too far, is how to derive prefixes. See Starke (to appear) for discussion.

Both will be shown to allow the derivation of AAB patterns. We will then consider some possible attested instances of AAB in comparative root suppletion. Finally, we shall investigate the occurrence of AAB patterns in other domains, arguing that, unlike ABA patterns, they are attested in a wide range of domains, and hence that they have a different status.

6.4.1 Hypothetical AAB patterns

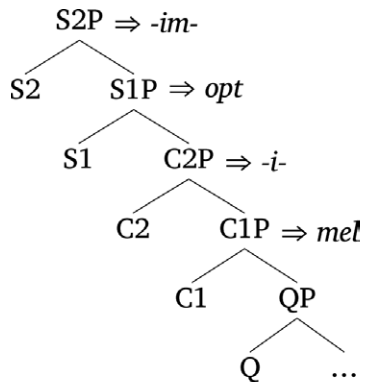
Let us start with a hypothetical case of portmanteau suppletion. We consider a hypothetical language, which differs minimally from Old Irish discussed above in that it would have an AAB pattern of the type *ferr-ferr-dech* 'good'.

(59)


(60) a. <$_{\textbf{ferr}}$ /ferr/, [$_{C2P}$ C2 [$_{C1P}$ C1 [$_{QP}$ Q [$_{aP}$ a √]]]] >
b. <$_{\textbf{dech}}$ /dech/, [$_{S2P}$ S2 [$_{S1P}$ S1 [**ferr**]]] >

Adopting the same spellout principles as above, the Superset Principle in particular implies that both the positive and the comparative degree will be spelled out by *ferr*. In other words, the theory we sketched does not block this type of AAB pattern.

The other logically possible type of AAB pattern is one with root suppletion. Here, too, we consider a hypothetical language, which is minimally different from Latin in that it would have an AAB pattern *melus-melior-optimus*. This can simply be achieved by eliminating the lexical item *bon-* from the lexicon of actual Latin, as considered above. Accordingly, the lexical entry for *mel-* does not contain a pointer. The result is depicted below:

(61)


(62) a. <**opt** /opt/, [$_{S1P}$ S1 [$_{C2P}$ C2 [**mel**]]] >
b. <**mel** /mel/, [$_{C1P}$ C1 [$_{QP}$ [$_{aP}$ a √]]], GOOD >

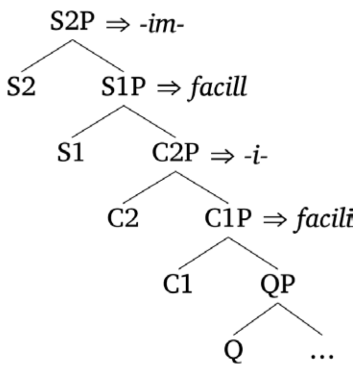
This hypothetical variant of Latin is also a possible language in our system.

6.4.2 Attested AAB patterns

In this section, we discuss two potential actual instances of AAB patterns in comparative root suppletion. The first one comes from Latin, the second from Welsh. The Latin pattern is found in a class of adjectives that we mentioned above, but have not provided an account for yet. These are adjectives of the *facilis* 'easy' class in (42) above, and those ending in *-er* in (43). The challenge posed by these adjectives is the gemination of the final stem consonant in the superlative (e.g. *facillimus* 'easiest', ācerrimus ‹sharpest›). The gemination is not just a spelling issue, but one that reflects the phonology, since it can be seen in metrical texts that it makes the relevant syllable heavy.[26]

We propose an analysis of these adjectives where the geminated stem is a suppletive superlative stem that spells out S2P, and which contains a pointer to the non-geminated stem found in the positive and comparative degrees, which spells out C1P:

(63)

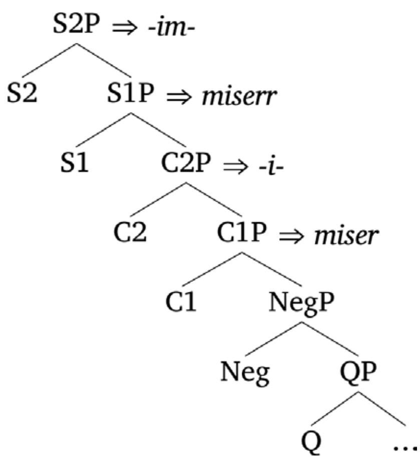


(64) a. <$_{\text{facill}}$ /facill/, [$_{\text{S1P}}$ S1 [$_{\text{C2P}}$ C2 **facili**]] >
b. <$_{\text{facili}}$ /facili/, [$_{\text{C1P}}$ C1 [$_{\text{QP}}$ Q [$_{\text{aP}}$ a √]]] , EASY >

This derives the comparative form *facili-i-or* (which reduces to *facilior* after *i*-deletion), and the superlative *facillimus*. Not all the adjectives with a stem ending in *-ili-* function this way, i.e. some have the regular endings, e.g. *stabilis, stabilissimus* 'firm(est)'; *illuster, illustrissimus* 'bright(est)' (Meiser 2002: 153). These are accounted for straightforwardly by assuming that their stem is a spellout of C1P, and they lack a spellout with pointer for S1P.

Non-*i*-stem adjectives with truncation in the superlative like *miser* 'miserable' work similarly:

(65)



[26] We are grateful to an anonymous reviewer for drawing our attention to this issue.

(66)	a.	$<_{\textbf{miserr}}$ /miserr/, $[_{S1P}$ S1 $[_{C2P}$ C2 **miser**]] $>$
	b.	$<_{\textbf{miser}}$ /miser/, $[_{C1P}$ C1 $[_{NegP}$ Neg $[_{QP}$ Q $[_{aP}$ a $\surd$]]]] , MISERABLE $>$

This will yield the comparative *miser-i-or* and the superlative *miserr-im-us*, as required. The analysis of these cases in effect amounts to an AAB pattern: the non-geminated stem is found in the positive and comparative degrees, and the geminated one in the superlative.

Other AAB patterns from Latin include the following paradigms, where the positive degree is closer to being a preposition than an adjective.

(67)

P		CMPR	SPRL	
super-us	'above'	super-i-or	suprēm-us	'higher/est'
			summ-us	
infer-us	'below'	infer-i-or	infim-us	'lower/est'
exter-us	'outward'	exter-i-or	extrēm-us	'outer (most)'
poster-us	'after'	poster-i-or	postrēm-us	'latter/last'

Like the previous case, these are only mildly suppletive, in that the two roots (e.g. *super-suprēm*) bear a clear phonological resemblance to one another. Even so, it is striking that the positive and the comparative share the same root, which is different from the superlative.[27]

The second potential AAB pattern in degree comparison comes from Welsh. The relevant data are given in (68) (Williams 1980: 33):

(68)

POS	CMPR	SPRL	
cryf	cryf-ach	cryf-af	'strong'
haw-dd	haw-s	haw-s-af	'easy'
an-o-dd	an-o-s	an-haw-s-af	'difficult'

The first of these adjectives, *cryf* 'strong', exemplifies the regular case, with the *-ach* suffix for the comparative and *-af* for the superlative. The bottom two adjectives are irregular. Comparing their superlatives, we are led to the conclusion that *an-* is a negative prefix, since *hawsaf* 'easiest' and *an-hawsaf* 'most difficult' differ minimally on this point. Disregarding this prefix, we then have the sequence *odd-os-hawsaf* on the bottom row. Now one could argue that this is not really an AAB, but rather an ABC pattern, given that the roots in the positive and the comparative are not completely identical. However, such an analysis makes another remarkable property of these two adjectives rather coincidental, namely, the shared *-dd* exponent in the positive degree, and the shared *-s* exponent, which appears both in the comparative and the superlative. It is tempting to see in the latter in particular an exponent of the comparative, which is morphologically transparently contained in the superlative. In the same vein, *-dd* could be seen as a spellout of some other feature, perhaps Q. Needless to say, this analysis raises further questions, such as why the exponents in question appear to be restricted to these two adjectives, and why the suppletive root *haw-*, which apparently spells out S1P, does not override the spellout of the comparative suffix (if that is indeed what it is). We shall not analyse this case any further here; our main concern has been to show that it might be analysed as an instance of an AAB pattern, and hence show that the absence of AAB in degree comparison might be less robust than is usually assumed.

[27] In the system of Bobaljik (2012), these cases would not need to be AAB patterns, but could be analysed as simple AAA patterns, the differences between the roots being handled by phonological readjustment rules, which apply after the rules of exponence. See (Bobaljik 2012: 139ff) for discussion.

6.4.3 ABA vs AAB

In this section, we discuss a fundamental asymmetry between ABA patterns and AAB patterns. Every empirical domain that has been investigated from this perspective has so far revealed the existence of the *ABA restriction. In contrast, the absence of AAB patterns appears to be next to unique to the domain of degree comparison. For example, as Caha (2009) has shown, AAB patterns are quite common in syncretism patterns of case marking suffixes. Now this concerns syncretism in suffixes, and the mechanics for spelling out these suffixes is not quite the same as that for root suppletion (although, as we have shown, nanosyntactic theory makes the same predictions regarding the possible occurrence of AAB patterns in both domains). However, attested AAB patterns are not restricted to affixes, but also occur in the domain of Ablaut and (root) suppletion.

As far as the former is concerned, Bobaljik (2012: 159) notes that Ablaut patterns in German verbs display AAB (e.g. *gebe, gegeben, gab* 'give-given-gave').[28] In the domain of suppletion, Smith et al. (2016) have looked at a variety of potential suppletion triggers, such as Case, Number, and clusivity. In all of these domains (with one possible exception), they have found AAB patterns. For example, in the area of Case-driven suppletion in pronouns, AAB patterns are attested. That is, given a Case hierarchy UNMARKED < DEPENDENT < OBLIQUE, there are languages that have a suppletive pronoun only in the oblique, e.g. German 3 SG F *sie-sie-ihr* (Smith et al. 2016: 18). Also in the domain of pronouns, Smith et al. (2016: 39) report that clusivity-driven suppletion features AAB patterns (e.g. Evenki has *bi-bu-mit* for 1 SG, 1 EXCL and 1 INCL, respectively). For number-driven suppletion, matters are more complicated. Looking at number-driven suppletion in nouns, Smith et al. (2016) find no AAB patterns, given a hierarchy SG < PL < DU. However, they do find a number of apparent ABA patterns, which leads them to conclude that there may be a markedness reversal in the hierarchy in certain languages, which inverts the order of PL and DU, yielding SING < DU < PL. The apparent ABA patterns then become AAB patterns (e.g. Hopi *wùuti-wùutit-momoyam* 'woman'). A summary of these findings is given in (69):

(69)

Domain	Hierarchy	AAB
Degree	POS < CMPR < SPRL	*
Ablaut	PRESENT < PARTICIPLE < PRETERITE	✓
Case	UNMARKED < DEPENDENT < OBLIQUE	✓
Clusivity	1SG < 1EXCL < 1INCL	✓
Number	SG < PL < DU	*
Number	SG < DU < PL	✓

The conclusion must be that, in so far as the absence of AAB patterns is indeed real in certain domains, it is far more restricted than the near-universal absence of ABA patterns, and therefore likely to have a different explanation.

In sum, the nanosyntactic model does not have a means of blocking the derivation of AAB patterns in (root) suppletion. This is a welcome result, as AAB patterns appear in a wide variety of domains where suppletion occurs. The apparent absence of AAB patterns in the degrees of comparison, if real, must therefore be attributed to hitherto unexplained factors (or to chance). This conclusion agrees with that of Bobaljik (2012), who also argues that the absence of ABA and AAB may be different phenomena altogether, and hence be due to different restrictions (see also Bobaljik & Sauerland 2017).

[28] The hierarchy of these forms is not the one in which they are traditionally given in grammars, but rather PRESENT < PARTICIPLE < PRETERITE; see Wiese (2008).

7 Conclusion

We have argued that the adjectival degrees of comparison involve a functional sequence <S2, S1, C2, C1, Q, a, √>. We showed how assuming this sequence accounted for a great deal of the finer details of Czech and Latin degree morphology, including the phenomenon of portmanteau and root suppletion, as well as a rather intricate set of facts related to the interaction of truncated suffixes and suppletive roots. We relied on no other assumptions or restrictions than the general assumptions and restrictions made available by the nanosyntactic framework, such as the principles of phrasal spellout, cyclic override, the Superset and the Elsewhere principle, and the mechanism of pointers. All variation between languages and between different word classes in the same language reduced to lexical differences, in particular the size of lexical trees. We showed how these assumptions allowed the derivation of suppletive patterns of the ABC type, as well as two different types of ABB patterns. We showed why ABA patterns are underivable in principle, and we discussed the special status of AAB patterns in comparative suppletion.

Abbreviations

ABL = ablative, ACC = accusative, CMPR = comparative, DAT = dative, DU = dual, EXCL = exclusive, F = feminine, GEN = genitive, INCL = inclusive, M = masculine, NEUT = neuter, NOM = nominative, PL = plural, POS = positive, SG = singular, SPRL = superlative

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Competing Interests

KDC has no competing interests to declare. GVW works as an Associate Editor for the journal Glossa and has no other competing interests to declare.

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